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wet. Mr. Meehan suggests that by taking sections at different places in the same log we would find the same layer bearing all kinds of testimony. The writer has heard classes gravely informed that the above was the fact, and also that the rings of growth found in fossil trees necessarily indicated seasons of cold and warmth. In the last instance a bright boy rather nonplussed the teacher by asking if there were no exogenous trees in the tropics.

PROF. F. C. PHILLIPS, of Western University, Penn., has been experimenting upon the effects produced upon plants by being grown in soil impregnated with certain metallic oxides. His conclusions are as follows:

1. That healthy plants, grown under favorable conditions, may absorb through their roots small quantities of lead, zinc, copper and arsenic.

2. That lead and zinc may enter the tissues in this way without causing any disturbance in the growth, nutrition and functions of the plant.

3. That the compounds of copper and arsenic exert a distinctly poisonous influence, tending, when present in larger quantity, to check the formation of roots, and either killing the plant or so far reducing its vitality as to interfere with nutrition and growth.

**New Stations for Rare Plants.**—1. *Botrychium matricariæfolium*, Al. Br. About June 10 of last summer, in company with Prof. Joseph Milliken of Columbus, O., I made an excursion for plants in the vicinity of this city. In a thicket on a northern slope, we found a specimen of this little fern. Going down on our hands and knees and making a thorough search, we finally counted *eighty-four* (84) specimens growing on an area of three or four square rods. This plant grows quite abundantly in eastern New York and in New England. But I have never before known it to be found west of the Alleghanies and south of Lake Superior. I have no doubt, though, that it grows on many a damp shady hillside with a northern exposure, in the states of Indiana, Kentucky and Ohio. It should be looked for during the month of June.

2. *Veratrum Woodii*, Robbins. This plant grows in the woods about Dayton, O. My attention was first called to it by finding it transplanted from the woods to a neighbor's door-yard. The plants were very few and far between, however, till I found quite a patch of it near Ludlow Falls, 17 miles above Dayton, on the banks of the Stillwater river. In one spot I counted fifteen (15) plants; the trouble was however that only four or five of them threw up flower stalks, so that I did not get many specimens.—A. P. MORGAN, Cincinnati.

**The Exogenous Flora of Lincoln Co., Miss., From October to May.** II.—In the brilliant procession of spring flowers come a few Asters and Golden Rods, heralds of the midsummer phalanx. Even the curious *Aster adnatus* is already in bud. Two things impress me as distinctive of the scenery and of the woodlands here.

There is very little of the freshness and the exuberance of vegetable growth which, farther north, characterize the time. There is literally, no spring, no period of complete transition, no universal awakening into life. Plants doze through the mild winter and are quite undecided what to do, even when the equinox is past. The Star Anise and the Magnolias simultaneously bloom, unfold their new shoots and drop last year's leaves. The winter annuals are ripening their seeds and dying when, by the calendar, we should only expect young leaves and opening buds.

Another feature of the southern forests, noticeable even here, where the luxuriance of growth is much less than on the rich alluvial lands, is the great number of vines and showily blooming trees and shrubs. Over a muddy bayou hang the Cherry Laurel, the graceful *Euonymus*, the *Styrax* and the Farkle-berry with its delicate sprays of bloom, all interwoven with the wiry stems and profuse gold of the Yellow Jessamine, and hung with the tawny red trumpets of the Cross Vine. Or, later, beneath the Magnolias and Sweet Bays are thickets of gleaming *Hydrangea* and *Itea*, overrun with the scarlet Honeysuckles and the fragrant *Forsteronia*. In the herbaceous growth of the open barrens *Leguminosæ* are now greatly in preponderance, although I judge that in the advancing summer they will be displaced by the coarser *Compositæ*.

## APRIL.

- |                                 |                                         |
|---------------------------------|-----------------------------------------|
| Magnolia grandiflora, L.        | decidua, Walt.                          |
| glauca, L.                      | Lobelia Nuttallii, R. & S.              |
| acuminata, L.                   | Catalpa speciosa, Warder.               |
| Malva rotundifolia, L.          | Pentstemon pubescens, Sol.              |
| Modiola multifida, Mœnch.       | gracilis, Nutt.                         |
| Drosera brevifolia, Pursh.      | Digitalis, Nutt.                        |
| Geranium Carolinianum, L.       | Plantago major, L.                      |
| Rhus copallina, L.              | Virginica, L.                           |
| Toxicodendron, L.               | Pedicularis Canadensis, L.              |
| var. quercifolia.               | Verbena Aubletia, L.                    |
| var. radicans.                  | Scutellaria serrata, Andrews.           |
| aromatica, Ait.                 | parvula, Michx.                         |
| Vitis Labrusca, L.              | Dianthera humilis, Gray.                |
| vulpina, L.                     | Ruellia ciliosa, Nees.                  |
| Ampelopsis quinquefolia, Michx. | Physalis Pennsylvanica, L., var. lance- |
| Euonymus Americana, L.          | angulata, L.                            |
| Polygala Boykinii, Nutt.        | Capsicum annuum, L. (nat.)              |
| fastigiata, Nutt.               | Datura Tatula, L.                       |
| Sesbania macrocarpa, Muhl.      | Spigelia Marylandica, L.                |
| Stylosanthes elatior, Sw.       | Asclepias variegata, L.                 |
| Schrankia uncinata, Willd.      | tuberosa, L.                            |
| Psoralea melilotoides, Michx.   | Asclepiodora viridis, Gray.             |
| var. eglandulosa (?)            | Polygonum incarnatum, Ell.              |
| Decumaria barbara, L.           | hydropiperoides, Michx                  |
| Specularia perfoliata, A. DC.   | acre, HBK.                              |
| Ludoviciana, Torr.              | aviculare, L.                           |
| Fedia radiata, Michx.           | Euphorbia corollata, L.                 |
| Maruta Cotula, DC.              | var. angustifolia.                      |
| Erigeron strigosum, Muhl.       | Celtis Mississippiensis, Bosc.          |
| Hex opaca, Ait.                 | Pilea pumila, Gray.                     |
| Dahoon, Walt.                   |                                         |

## MAY.

|                                      |                                  |
|--------------------------------------|----------------------------------|
| Cleome pungens, Willd.               | Desmodium paniculatum, DC.       |
| Malva sylvestris, L.                 | Psoralea canescens, Michx.       |
| Cocculus Carolinus, DC.              | [Gr. Tephrosia Virginica, Pers.  |
| Hypericum Canadense, L., var. major, | spicata, T. & G.                 |
| Drummondii, T. & G.                  | hispidula, Pursh.                |
| Polygala incarnata, L.               | Crotalaria Purshii, DC.          |
| Erythrina herbacea, L.               | Solidago radula, Nutt.           |
| Passiflora incarnata, L.             | Aster patens, Ait.               |
| lutea, L.                            | surculosus, Michx.               |
| Rhexia Mariana, L.                   | Echinacea angustifolia, DC.      |
| Hydrangea quercifolia, Bartram.      | Rudbeckia hirta, L.              |
| arborescens, L.                      | Coreopsis lanceolata, L.         |
| Hydrocotyle interrupta, Muhl.        | Helianthus occidentalis, T. & G. |
| Sanicula Canadensis, L.              | doronicoides, Lam.               |
| Eryngium prostratum, Baldwin.        | Cirsium Virginianum, Michx.      |
| Discopleura capillacea, DC.          | Pyrrhopappus Carolinianus, DC.   |
| Thaspium barbinode, Nutt.            | Oxydendrum arboreum, DC.         |
| Sambucus Canadensis, L.              | Solanum nigrum, L.               |
| Lonicera sempervirens, Ait.          | Carolinense, L.                  |
| grata, Ait.                          | Forsteronia difformis, A. DC.    |
| Cephalanthus occidentalis, L.        | Saururus cernuus, Willd.         |
| Galium hispidulum, Michx.            | Phytolacca decandra, L.          |
| Helenium tenuifolium, Nutt.          | Callicarpa Americana, L.         |
| Ceanothus Americana, L.              |                                  |

MARTHA B. FLINT, *Brookhaven, Miss.*

“*Beitraege zur Morphologie und Physiologie der Pilze*, von A. DEBARY und M. WORONIN. Fuenfte Reihe. BEITRAG zur Kenntniss der Ustilagineen, mit vier Tafeln.”—In this important contribution to Mycological literature we have an attempt to form a philosophical system of classification of the *Ustilagineae* upon the peculiarities of spore growth and “sporidia” production. It is quite needless to say that it is based upon the quiet assumption that the time has come for giving life history more, and a single phase of life history less weight in our systems of classification. Of course beside the leading idea of the contribution many isolated facts of value find place in this clearly written and beautifully illustrated memoir. We can only give the more important in this brief *resume*.

Plate I represents *Tuburcinia Trientalis*, which in its conidial state covers the under side of the leaves of *Trientalis Europaea*, L. The specimen was taken early in June. Sections made through the young leaves of the host show an abundant ramification of the cross-partitioned hyphæ beneath the epidermis, and between and into the chlorophyll-bearing cells. These threads reach the air either through a stoma, or sometimes directly between the epidermis cells. Some of the escaping threads creep in a tortuous manner over the leaf surface; others are erect and terminated by a single inversely pear-shaped conidium. Sowing these conidia on a growing *Trientalis* leaf and after a short time removing the epidermis it will be seen that the conidial threads have reached the interior of the leaf between the cells of the epidermis.

Plate II gives the condition of affairs in late summer, when a transverse section through the stem shows spore masses in the